

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**In re the Application of**

**Yasuo MATSUMURA et al.**

**Group Art Unit: 1756**

**Application No.: 09/884,090**

**Examiner: J. Dote**

**Filed: June 20, 2001**

**Docket No.: 109890**

**For: TONER FOR DEVELOPING ELECTROSTATIC IMAGE, PROCESS FOR  
PRODUCING TONER FOR DEVELOPING ELECTROSTATIC IMAGE,  
DEVELOPER FOR DEVELOPING ELECTROSTATIC IMAGE, AND PROCESS  
FOR FORMING IMAGE**

**DECLARATION UNDER 37 C.F.R. §1.132**

**I, Yasuo Matsumura, a citizen of Japan, hereby declare and state:**

- 1. I have a Master's Degree in Polymer Chemistry, which was conferred upon me by the Faculty of Engineering of Kyoto University in 1981.**
- 2. I have been employed by Fuji Xerox Co., Ltd. since 1981 and I have had a total of 10 years of work and research experience in the field of Chemical Toner Development for Electrophotography.**
- 3. I and/or those under my direct supervision and control have conducted tests comparing the invention claimed in the above-captioned application and U.S. Patent No. 6,022,662 to Matsumura et al. (Matsumura 662), U.S. Patent No. 5,910,389 to Matsumura et al. (Matsumura 389) and U.S. Patent No. 6,163,346 to Machata et al. (Machata). The results of these comparisons are summarized below.**

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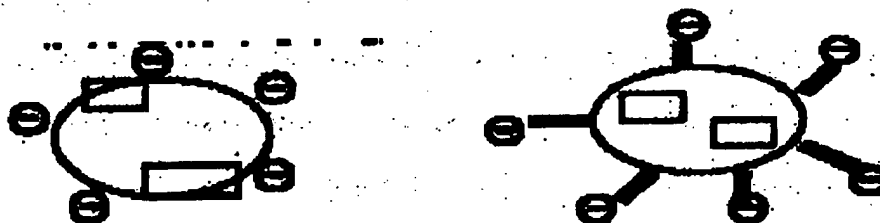
	Claimed Invention	Example 2 of Maehata	Matsumura 389	Matsumura 662
Wax Content	10%	8%	About 8%	About 8%
Method for stabilizing aggregation	Increase of pH by sodium hydroxide solution	Increase of pH by sodium hydroxide solution	Anion interfacial active agent	Anion interfacial active agent
Particle fusing temperature	98°C	97°C	90°C or 100°C ~ 110°C	95°C
Particle fusing time	6 hours	3 hours	2 ~3 hours	5 hours
Height of protrusions	1.5µm	0µm	0µm	0µm

The toner described in Example 3 of the present application, and according to the claimed invention, differs from the toner of Example 2 of Maehata mainly in the amount of wax content and the particle fusing time (fusing-and-integration time). These differences have an impact on a shape of wax protrusion in the resultant toner particles. In other words, in the invention of this application, in which the amount of wax is larger than in Maehata, a domain size of the wax in a toner is easily increased. In addition, since the fusing-and-integration time is long, it is easy to cause migration of the wax domain to the surface of the toner. Accordingly, protrusions form on the surface of the toner. However, in Example 2 of Maehata, the amount of wax is smaller and the fusing-and-integration time is shorter. The height of the protrusions on the surface of the toner is 0 µm. Thus, the toner particles of Maehata are different from the toner particles of the claimed invention, which have protrusions on the surface with heights in the range of approximately 0.05 µm to 2 µm.

The differences between the invention claimed in this application and Example 1 of Matsumura 662 and Example 3 of Matsumura 389 are in the amount of wax, the fusing time and the fusing temperature, conditions which have an effect on the wax protrusions in the final product. In addition, these references differ from the claimed invention in the means

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for stabilizing the aggregated particles. In both Matsumura 662 and Matsumura 389, an anion interfacial active agent is used as the means for stabilizing the aggregated particles. Therefore, the interfacial active agent adheres to a surface of the particle in water. Since the interfacial active agent is tightly packed and hardens, it is difficult to deform the surface of the particles. Therefore, even if fusing and integration is conducted at high temperatures, it is difficult to form protrusions of the wax on the surface of the toner, i.e., it is difficult to cause the migration of the wax. Thus, the height of the protrusions on the surface of the toner is 0  $\mu\text{m}$ . In other words, the particles of Matsumura 662 and the particles of Matsumura 389 do not have surface protrusions as provided for and required by the claimed invention.

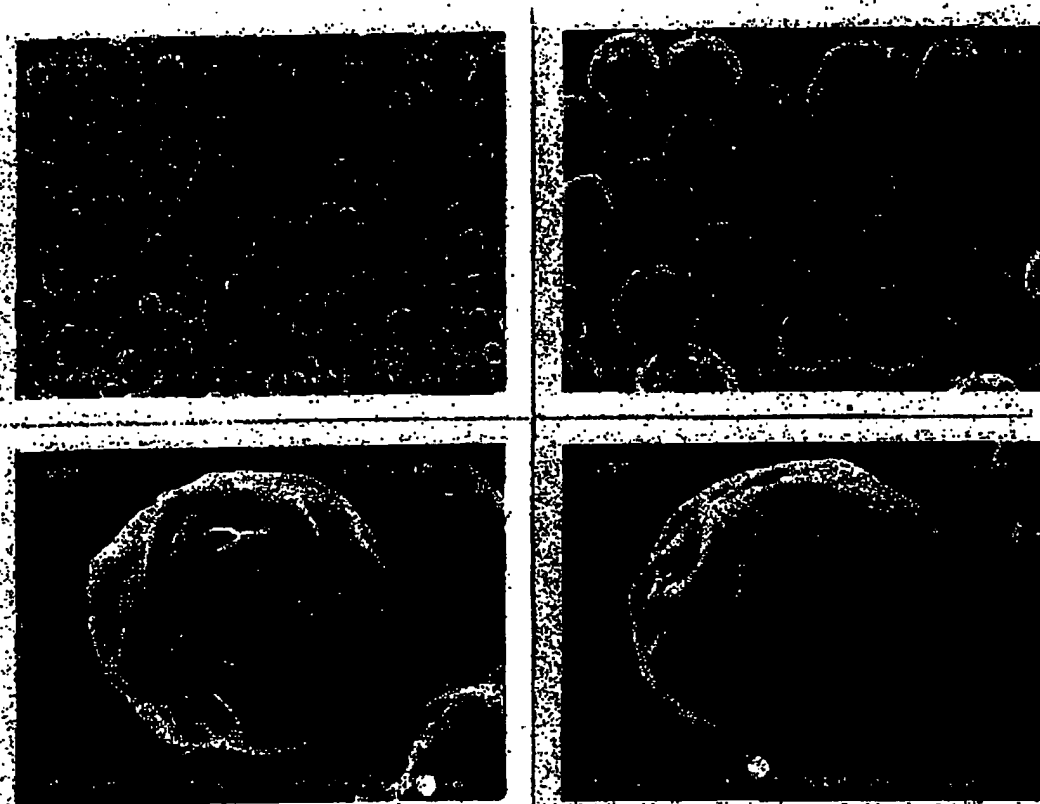


Adding an anion interfacial active agent, as in the Matsumura references, prevents the wax from migrating to the surface of the particles due to an effect of absorption to the surface.

However, adding sodium hydroxide, as described in the present application, does not prevent the wax from migrating because a leaving group on the surface of the particles performs the stabilization of the aggregates. The toner particles of the claimed invention have protrusions on the surface, which range in height from approximately 0.05  $\mu\text{m}$  to 2  $\mu\text{m}$ , and the claimed toner particles have different surface property indices than the toner particles of Matsumura 662 or Matsumura 389.

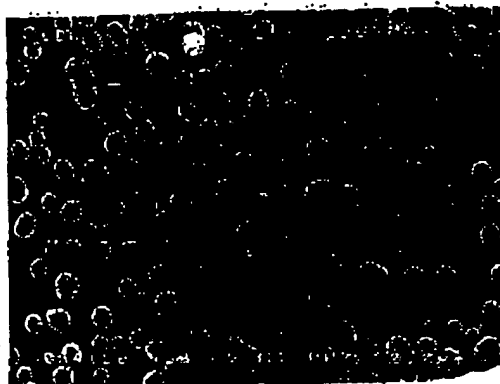
The difference in the particles produced by the different methods can be easily seen from the photographs below.

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Adding NaOH at 98°C for 6 hours

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Adding anion interfacial active agent at 110°C for 3 hours

Thus, the toner particles with surface protrusions approximately 0.05  $\mu\text{m}$  to 2  $\mu\text{m}$  in height and toner particles having surface property index of 2.0 or less, both according to the claimed invention, are different from the toner particles of Matsumura 662, Matsumura 389 and Machata.

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I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Date:

May 22, 2003Yasuo Matsumura

Yasuo MATSUMURA